

IN THE CLAIMS:

1. (Currently Amended) A data replacement output apparatus, comprising:

a receiving unit operable to receive a data stream including replacement object data and non-replacement-object data, the replacement object data being a constituent element of a data broadcast program and being replaceable with replacement data, the non-replacement
5 object data being a constituent element of the data broadcast program and being not replaceable with replacement data; and

an output control unit operable to replace the replacement object data included in the data stream with the replacement data, and output the data stream after the replacement at a bit rate which is same as a bit rate at which the data stream was received, wherein

10 the data stream is transmitted by a carousel transmission method,

each of the replacement object data, the non-replacement-object data, and the replacement data is composed of a plurality of units of data having the same size, and

the output control unit, when a reference time is defined as a time when a total number of units of data constituting the replacement data having been output becomes equal to a
15 total number of units of data constituting the replacement object data having been received, makes a comparison between (i) a total number of units of data constituting the replacement object data that have been received during a time period from a newest reference time to a current time and (ii) a total number of units of data constituting the replacement data that have been output during the time period, outputs the non-replacement-object data when (ii) the total
20 number of units of data constituting the replacement object data is larger than (i) the total number of units of data constituting the replacement object data, and outputs the replacement data when

(ii) the total number of units of data constituting the replacement data is no larger than (i) the total number of units of data constituting the replacement object data,

wherein the output control unit includes:

25 a judging sub-unit operable to, each time a unit of data is received, judge whether the received unit of data constitutes the replacement object data;

30 a comparing sub-unit operable to compare the total number of units of data constituting the replacement object data that have been received during the time period with the total number of units of data constituting the replacement data that have been output during the time period, and

35 a data output sub-unit operable to output the replacement data if it is found as a result of the comparison by the comparing sub-unit that the total number of units of data constituting the replacement data that have been output during the time period is no larger than the total number of units of data constituting the replacement object data that have been received during the time period.

2. (Cancelled)

3. (Currently Amended) The data replacement output apparatus of Claim [[2]] 1,
wherein

the output control unit includes

5 a storage sub-unit operable to store the non-replacement-object data, and

the data output sub-unit reads the non-replacement-object data from the storage sub-unit and outputs the read non-replacement-object data when the total number of units of data constituting the replacement data that have been output during the time period is larger than the

total number of units of data constituting the replacement object data that have been received
10 during the time period.

4. (Previously Presented) The data replacement output apparatus of Claim 1,
wherein

the output control unit includes:

a judging sub-unit operable to, each time a unit of data is received, judge whether
5 the received unit of data constitutes the replacement object data;

a calculating sub-unit operable to calculate a replacement insufficiency count
value by subtracting (i) the total number of units of data constituting the replacement data that
have been output during the time period from (ii) the total number of units of data constituting
the replacement object data that have been received during the time period;

10 a count value judging sub-unit operable to, when (ii) the total number of units of
data constituting the replacement data is no larger than (i) the total number of units of data
constituting the replacement object data, judge whether the replacement insufficiency count
value is smaller than the number of units of data constituting the replacement data; and

a data output sub-unit operable to output the replacement data when the count
15 value judging sub-unit judges that the replacement insufficiency count value is no smaller than
the number of units of data constituting the replacement data.

5. (Previously Presented) The data replacement output apparatus of Claim 1,
wherein

the output control unit includes:

a judging sub-unit operable to, each time a unit of data is received, judge whether
5 the received unit of data constitutes the replacement object data;

a calculating sub-unit operable to calculate a replacement excess insufficiency
count value by subtracting (i) the total number of units of data constituting the replacement data
that have been output during the time period from (ii) the total number of units of data
constituting the replacement object data that have been received during the time period;

10 a count value judging sub-unit operable to, when (ii) the total number of units of
data constituting the replacement data is no larger than (i) the total number of units of data
constituting the replacement object data, judge whether the replacement insufficiency count
value is smaller than half of the number of units of data constituting the replacement data; and

a data output sub-unit operable to output the replacement data when the count
15 value judging sub-unit judges that the replacement insufficiency count value is no smaller than
half of the number of units of data constituting the replacement data.

6. (Previously Presented) The data replacement output apparatus of Claim 1,
wherein

the data stream includes a plurality of types of replacement object data,

the output control unit includes

5 a replacement data storage sub-unit operable to store a plurality of types of
replacement data that respectively correspond to the plurality of types of replacement object data,
and

the output control unit (a) makes a comparison between each pair of (iii) a total
number of units of data constituting one of the plurality of types of replacement object data that

10 have been received during the time period and (iv) a total number of units of data constituting one of the plurality of types of replacement data, which corresponds to the type of replacement object data in (iii), that have been output during the time period, (b) outputs the non-replacement-object data when, with respect to all of the types of replacement data, (iv) the total number of units of data constituting one of the plurality of types of replacement data is larger than (iii) the total number of units of data constituting corresponding one of the plurality of types of replacement object data, and (c) outputs the replacement data when, with respect to any of the types of replacement data (iv) the total number of units of data constituting one of the plurality of types of replacement data is no larger than (iii) the total number of units of data constituting corresponding one of the plurality of types of replacement object data.

7. (Previously Presented) The data replacement output apparatus of Claim 6, wherein

the output control unit includes:

the determining unit calculates the a calculating sub-unit operable to calculate a
5 replacement excess count value for each pair of a type of replacement object data and a corresponding type of replacement data; and

a data output sub-unit operable to, when one or more replacement excess count values calculated by the calculating sub-unit are smaller than "0", select a type of replacement data among one or more types of replacement data corresponding to the one or more replacement
10 excess count values that are smaller than "0", based on a predetermined criterion, and output the selected type of replacement data.

8. (Previously Presented) The data replacement output apparatus of Claim 7,
wherein

the predetermined criterion is that a type of replacement data that corresponds to
the smallest value among the one or more replacement excess count values that are smaller than
5 “0”, should be selected.

9. (Previously Presented) The data replacement output apparatus of Claim 7,
wherein

different priority levels are respectively assigned to the plurality of types of
replacement data, and

5 the determining unit selects the predetermined criterion is that a type of
replacement data to which the highest priority level has been assigned among one or more types
of replacement data that correspond to the one or more replacement excess count values that are
smaller than “0”, should be selected.

10. (Previously Presented) The data replacement output apparatus of Claim 7,
wherein

a type of replacement data is pre-selected from the plurality of types of
replacement data, and

5 if a replacement excess count value for the pre-selected type of replacement data
is smaller than “0”, the determining unit data output sub-unit selects the pre-selected type of
replacement data, and

if the replacement excess count value for the pre-selected type of replacement data is no smaller than “0”, the data output sub-unit selects a type of replacement data that corresponds to the smallest value among the one or more replacement excess count values.

11. (Previously Presented) The data replacement output apparatus of Claim 6, wherein

different priority levels are respectively assigned to the plurality of types of replacement data and the non-replacement-object data,

5 the output control unit includes:

the determining unit calculates a calculating sub-unit operable to calculate the replacement excess count value for each pair of a type of replacement object data and a corresponding type of replacement data, and

a data output sub-unit operable to, if one or more replacement excess count values calculated by the output control unit are smaller than “0”, and if any priority level assigned to a type of replacement data corresponding to a replacement excess count value smaller than “0” is no smaller than a priority level assigned to the non-replacement-object data, output a type of replacement data which should be output.

12. (Previously Presented) The data replacement output apparatus of Claim 1, wherein

the data stream includes a plurality of types of replacement object data,

the output control unit includes

5 a post-replacement data storage sub-unit operable to store a plurality of types of replacement data that respectively correspond to the plurality of types of replacement object data, and

 the output control unit makes a comparison between (iii) a total number of units of data constituting the plurality of types of replacement object data that have been received
10 during the time period and (iv) a total number of units of data constituting the plurality of types of replacement data that have been output during the time period, outputs the non-replacement-object data when (iv) the total number of units of data constituting the plurality of types of replacement data is larger than (iii) the total number of units of data constituting the plurality of types of replacement object data that have been received during the time period, and outputs one
15 of the plurality of types of replacement data when (iv) the total number of units of data constituting the plurality of types of replacement data is no larger than (iii) the total number of units of data constituting the plurality of types of replacement object data that have been received during the time period.

13.-14. (Cancelled)

15. (Previously Presented) A data replacement output, comprising:

 a receiving step for receiving a data stream including replacement object data and non-replacement-object data, the replacement object data being a constituent element of a data broadcast program and being replaceable with replacement data, the non-replacement object data
5 being a constituent element of the data broadcast program and being not replaceable with replacement data; and

an output control step for replacing the replacement object data included in the data stream with the replacement data, and outputting the data stream after the replacement at a bit rate which is same as a bit rate at which the data stream was received, wherein

- 10 the data stream is transmitted by a carousel transmission method,
- each of the replacement object data, the non-replacement-object data, and the replacement data is composed of a plurality of units of data having the same size, and
- the output control step, when a reference time is defined as a time when a total number of units of data constituting the replacement data having been output becomes equal to a
- 15 total number of units of data constituting the replacement object data having been received, makes a comparison between (i) a total number of units of data constituting the replacement object data that have been received during a time period from a newest reference time to a current time and (ii) a total number of units of data constituting the replacement data that have been output during the time period, outputs the non-replacement-object data when (ii) the total
- 20 number of units of data constituting the replacement data is larger than (i) the total number of units of data constituting the replacement object data, and outputs the replacement data when (ii) the total number of units of data constituting the replacement data is no larger than (i) the total number of units of data constituting the replacement object data.

16. (Cancelled)

17. (Previously Presented) A computer-readable recording medium recorded with a program for causing a data replacement output apparatus to perform a data replacement output process,

 the data replacement output process comprising:

5 a receiving step for receiving a data stream including replacement object data and non-replacement-object data, the replacement object data being a constituent element of a data broadcast program and being replaceable with replacement data, the non-replacement object data being a constituent element of the data broadcast program and being not replaceable with replacement data; and

10 an output control step for replacing the replacement object data included in the data stream with the replacement data, and outputting the data stream after the replacement at a bit rate which is same as a bit rate at which the data stream was received, wherein

 the data stream is transmitted by a carousel transmission method,

 each of the replacement object data, the non-replacement-object data, and the
15 replacement data is composed of a plurality of units of data having the same size, and the data replacement output control program comprising:

 the output control step, when a reference time is defined as a time when a total number of units of data constituting the replacement data having been output becomes equal to a total number of units of data constituting the replacement object data having been received,

20 makes a comparison between (i) a total number of units of data constituting the replacement object data that have been received during a time period from a newest reference time to a current time and (ii) a total number of units of data constituting the replacement data that have been output during the time period, outputs the non-replacement-object data when(ii) the total number of units of data constituting the replacement data is larger than (i) the total number of
25 units of data constituting the replacement object data, and outputs the replacement data when (ii) the total number of units of data constituting the replacement data is no larger than (i) the total number of units of data constituting the replacement object data.

18.-23. (Cancelled)